MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2018/2019

PSP 0101 – PROBLEM SOLVING AND PROGRAM DESIGN

(Foundation in Information Technology)

13 MARCH 2019
9:00 A.M – 11:00 A.M
(2 Hours)

INSTRUCTIONS TO STUDENT

1. This question paper consists of **THREE** pages excluding the cover page.
2. Answer **ALL** questions.
3. Write your answers in the Answer Booklet.

Instructions: Answer **ALL** questions. Write your answers in the Answer Booklet.

QUESTION 1 [25 Marks]

a. Yoda is 66cm tall, Anakin is 1.9m tall and Luke is 1.7m tall. The information regarding Chewbacca's height is missing but it is known that the average height for all of them is 164cm. How tall is Chewbacca?

i. Identify the problem.

(1 mark)

ii. What do you understand from the problem?

(3 marks)

iii. Write the equation using proper variable names to solve this problem.

(1 mark)

iv. Evaluate and solve this problem.

(2 marks)

b. Figure 1 shows a pyramid that consists of four triangles and a rectangular shaped base. Create an IPO chart to calculate and print the outer surface area for this pyramid.

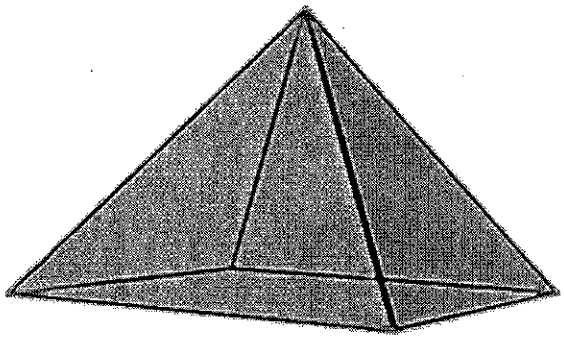

Figure 1

(8 marks)

c. In order to calculate the monthly installment for a conventional car loan in Malaysia, you need to know the price of the car and the down payment you are willing to pay. From here, you will know your loan amount. You need to know the interest rate and also the total loan period. The following formulas are to determine the total interest and monthly installment of your car loan:

Loan Amount = Car Price – Down Payment
Your Total Interest = Interest Rate/100 x Loan Amount x Loan Period (in year)
Your Monthly Instalment = (Loan Amount + Total Interest) / Loan Period (in months)

Write a pseudocode to help someone to calculate his/her monthly installment for his/her car purchase.

(10 marks)

Continued...

QUESTION 2 [25 Marks]

a. The table below shows the new PTPTN repayment scheme, which is currently suspended until further notice. Using a **positive logic structure**, write a pseudocode for a program that will ask for the user to enter his/her salary and the program will calculate and print the scheduled monthly salary deduction for the PTPTN loan and the user's salary balance.

Salary (in RM)	% Deduction
Less than 2000	0
2000 – 2499.99	2
2500 – 2999.99	3
3000 – 3999.99	5
4000 – 5999.99	8
6000 – 7999.99	10
8000 and above	15

(16 marks)

b. Peter Parker did a survey to get the price of 5-packs Maggi Curry at 3 different stores. Write a pseudocode to help Peter Parker decide what is the price of the cheapest pack of 5-packs Maggi Curry. Hint: He needs to enter 3 different prices (assume that the prices are different) and do the comparison using **straight-through logic structure**.

(9 marks)

QUESTION 3 [25 Marks]

a. In order to watch a movie, a user has to key in the username and a password. The username is set as ***Bandersnatch*** and the password is set as ***Netflix@2019***. The user is given 3 chances to key in the correct username and password. If the username and password are matched within that 3 attempts, print the message: ***Welcome and Enjoy!***. If the user fails to enter the correct username and password in 3 attempts, print the message: ***Flip table***. Draw a flowchart for this program using a **Repeat-Until loop**.

(14 marks)

b. Write a pseudocode using **While-WhileEnd loop** to create a program with an output as shown below:

```
1
2  3
4  5  6
7  8  9  10
```

(11 marks)

Continued...

QUESTION 4 [25 Marks]

a. Each character of the user's name entered by a user is stored as array element. Write a pseudocode using an **Automatic-Counter loop** to count and print the number of vowels (A, E, I, O, U) that appear in that name.

(10 marks)

b. Jason wants to write a program that will calculate the area and perimeter of a rectangle. It will only print either one based on the user's selection. If the user chooses **A**, the value of area will be printed, else, the value of perimeter will be printed.

Write a complete pseudocode (using functions) to calculate and print the user's selection. Your pseudocode shall include the following functions:

i. A function definition named **GetInputValues** that gets user input for height and width.
ii. A function definition named **CalcAreaAndPeri** that calculates the area and perimeter from values obtained in GetInputValues function.
iii. A main function that calls the above two functions, ask the user for the choice and using a decision structure, print the area or the perimeter.

Choose your function parameters and return values adequately.

(15 marks)

End of Paper